

This listing of claims will replace all prior versions, and listings, of claims in the application:

The Status of the Claims

1. (Currently amended) A method of removing polymer generated in a semiconductor manufacturing process, which includes sequentially depositing a lower metal layer, an insulating layer and an upper metal layer on a semiconductor substrate; forming a photoresist pattern on the upper metal layer; and etching the upper metal layer and the insulating layer by using the photoresist pattern as a mask, the polymer being generated during the etching step, the method comprising:
 - (a) removing the photoresist pattern by using O₂/N₂ plasma; and
 - (b) removing the polymer existing on the lower metal layer by using H₂O/CF₄ plasma.
2. (Original) A method as defined by claim 1, wherein (a) is carried out for about 50 seconds.
3. (Original) A method as defined by claim 1, wherein a flow rate of a CF₄ gas in (b) is in a range from 5% to 15% of that of an H₂O gas.
4. (Original) A method as defined by claim 1, further comprising (c) by using O₂ plasma, removing residues of the photoresist pattern remaining after (b).
5. (Original) A methods as defined by claim 4, wherein powered in the (a), (b) and (c) are substantially the same.

6. (Original) A method as defined by claim 4, wherein a process time of (c) is in a range from 40% to 60% of that of (a).

7. (Original) A method as defined by claim 4, wherein a process time of (b) is in a range of 30% to 50% of that of (a).

8. (Original) A method of manufacturing a semiconductor device having a capacitor, the method comprising:

(a) sequentially depositing a lower metal layer, an insulating layer and an upper metal layer on a semiconductor substrate;

(b) forming a first photoresist pattern on the upper metal layer;

(c) forming an upper electrode film and a capacitor insulating film by etching the upper metal layer and the insulating layer by using the first photoresist pattern as a mask;

(d) removing the first photoresist pattern by using O_2/N_2 plasma;

(e) removing polymer existing on the lower metal layer by using H_2O/CF_4 plasma;

(f) forming a second photoresist pattern for completely encapsulating the upper electrode film and the capacitor insulting film;

(g) forming a lower electrode film by etching the lower metal layer by using the second photoresist pattern as a mask and

(h) removing the second photoresist pattern to provide the capacitor including the lower electrode film, the capacitor insulating film and the upper electrode film.

9. (Original) A method as defined by claim 8, further comprising, between (e) and (f): removing residues of the first photoresist pattern remaining after (e) by using O₂ plasma.